

Operating Instructions

CYA680

Flow assembly

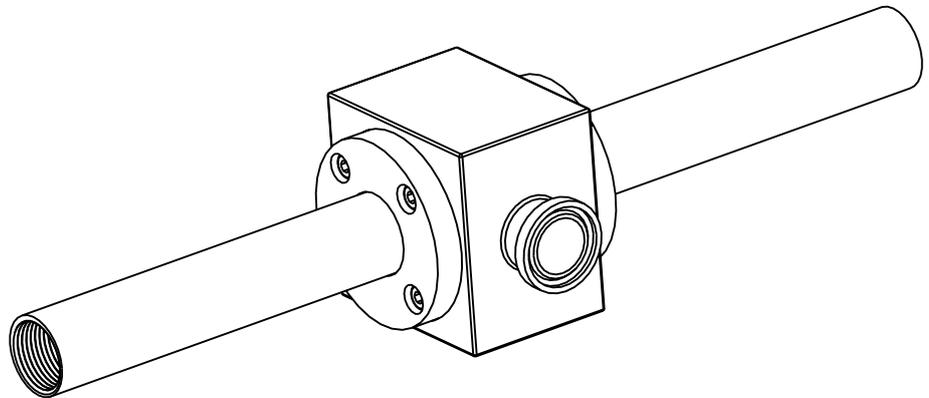


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1 Document information

1.1 Warnings

Structure of information	Meaning
 DANGER Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) <ul style="list-style-type: none"> ▶ Corrective action 	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation will result in a fatal or serious injury.
 WARNING Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) <ul style="list-style-type: none"> ▶ Corrective action 	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.
 CAUTION Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) <ul style="list-style-type: none"> ▶ Corrective action 	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
NOTICE Cause/situation If necessary, Consequences of non-compliance (if applicable) <ul style="list-style-type: none"> ▶ Action/note 	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols used

Symbol	Meaning
	Additional information, tips
	Permitted or recommended
	Not permitted or not recommended
	Reference to device documentation
	Reference to page
	Reference to graphic
	Result of a step

1.3 Symbols at the device

Symbol	Meaning
	Reference to device documentation

2 Basic safety instructions

2.1 Requirements for the personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

 Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Designated use

The CYA680 flow assembly is designed for the installation of 12 mm sensors with Pg 13.5 in pipes.

Its mechanical construction means that it can be operated in pressurized systems (see technical data).

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted.

The manufacturer is not liable for damage caused by improper or non-designated use.

2.3 Occupational safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations

2.4 Operational safety

1. Before commissioning the complete measuring point, verify that all connections are correct. Ensure that electrical cables and hose connections are undamaged.
2. Do not operate damaged products, and protect them against unintentional operation. Label the damaged product as defective.
3. If faults cannot be rectified, products must be taken out of service and protected against unintentional operation.

2.5 Product safety

The product is designed to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate. The relevant regulations and European standards have been observed.

3 Incoming acceptance and product identification

3.1 Incoming acceptance

1. Verify that the packaging is undamaged.
 - ↳ Notify your supplier of any damage to the packaging.
Keep the damaged packaging until the matter has been settled.
2. Verify that the contents are undamaged.
 - ↳ Notify your supplier of any damage to the delivery contents.
Keep the damaged products until the matter has been settled.
3. Check the delivery for completeness.
 - ↳ Check it against the delivery papers and your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
 - ↳ The original packaging offers the best protection.
The permitted ambient conditions must be observed (see "Technical data").

If you have any questions, please contact your supplier or your local sales center.

3.2 Product identification

3.2.1 Nameplate

The nameplate provides you with the following information on your device:

- Manufacturer identification
- Order code
- Extended order code
- Serial number
- Ambient and process conditions
- Safety information and warnings

 Compare the data on the nameplate with your order.

3.2.2 Product identification

Product page

www.endress.com/cya680

Interpreting the order code

The order code and serial number of your product can be found in the following locations:

- On the nameplate
- In the delivery papers

Obtaining information on the product

1. Go to the product page for your product on the Internet.
2. At the bottom of the page, click the link **Online Tools** and then select **Access device specific information**.
 - ↳ An additional window opens.
3. Enter the order code from the nameplate into the search field and then select **Show details**.
 - ↳ You will receive information on each feature (selected option) of the order code.

Manufacturer's address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
D-70839 Gerlingen

3.3 Scope of delivery

The delivery comprises:

- Assembly in the version ordered
- Operating Instructions

4 Installation

4.1 Installation conditions

The CYA680 flow assembly is designed for mounting in pipes. This requires the availability of suitable Tri-Clamp connections.

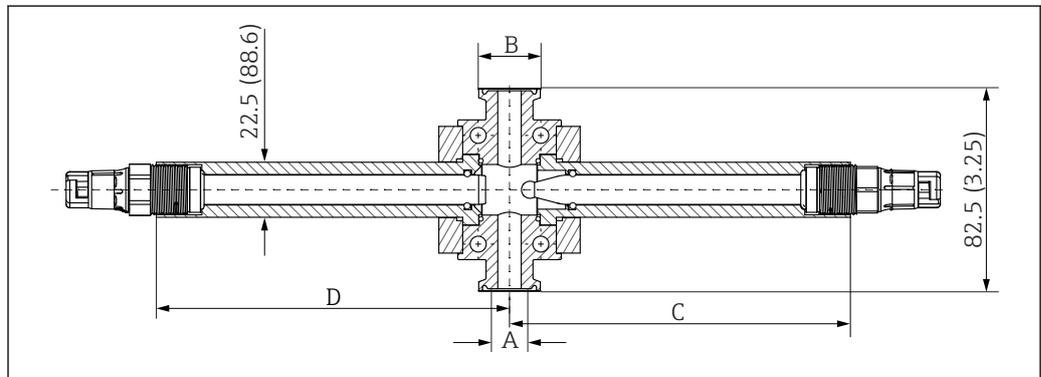
It can be installed both in horizontal and vertical pipes.

Orientation

Please follow the installation instructions for the sensors used!

If the Ceragel CPS71D is installed vertically, use electrode version TU for upside-down installation.

4.2 Dimensions



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 1 Dimensions in mm (inch)

- A Internal diameter
- B Flange diameter
- C Sensor holder pH
- D Sensor holder conductivity

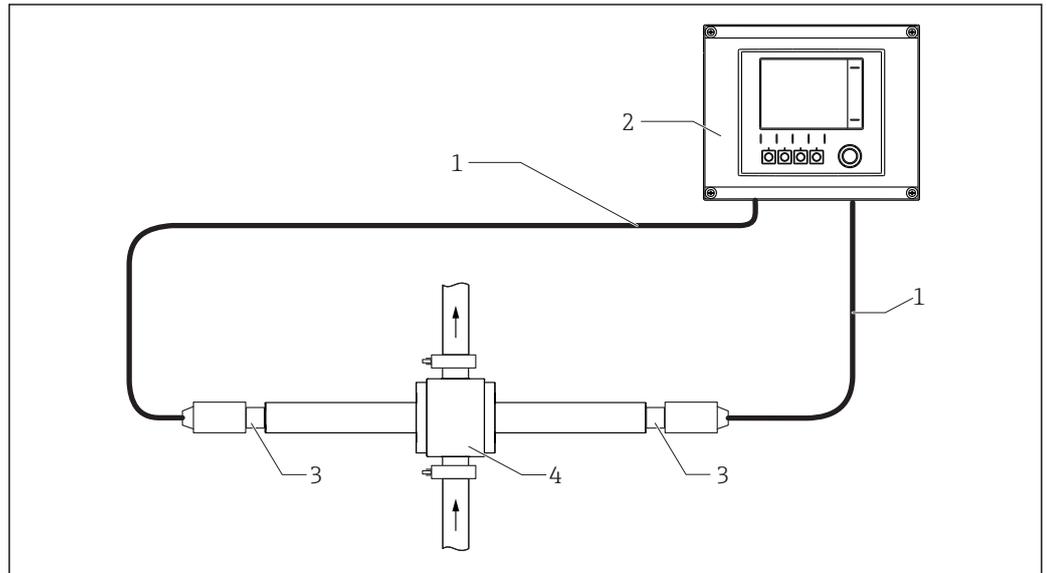
Flange	A	B	C	D
¼" Tri-Clamp	4.57 mm (0.18")	25 mm (0.984")	138.4 mm (5.45")	143.4 mm (5.65")
½" Tri-Clamp	9.53 mm (0.375")	25 mm (0.984")	138.4 mm (5.45")	143.4 mm (5.65")
¾" Tri-Clamp	15.24 mm (0.60")	25 mm (0.984")	138.4 mm (5.45")	143.4 mm (5.65")
1" Tri-Clamp	22.1 mm (0.87")	50.39 mm (1.984")	144 mm (5.67")	149 mm (5.87")
1 ½" Tri-Clamp	34.44 mm (1.356")	50.39 mm (1.984")	144 mm (5.67")	149 mm (5.87")
2" Tri-Clamp	45 mm (1.856")	63.91 mm (2.516")	150 mm (5.92")	155 mm (6.10")

4.3 Installation

4.3.1 Measuring system

A complete measuring system comprises:

- Transmitter, for example Liquiline CM44P
- One or two 12 mm sensors, e.g. CLS82D and / or CPS71D
- Flow assembly CYA680
- Measuring cable, for example CYK10



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2 Example of a measuring system

- 1 Measuring cable
- 2 Liquiline CM44P transmitter
- 3 Sensors
- 4 Flow assembly CYA680

4.3.2 Installing the assembly in the process

⚠ WARNING

Risk of injury from high pressure, high temperature or chemical hazards if process medium escapes.

- ▶ Wear protective gloves, protective goggles and protective clothing.
- ▶ Install the assembly only if the pipes are empty and unpressurized.

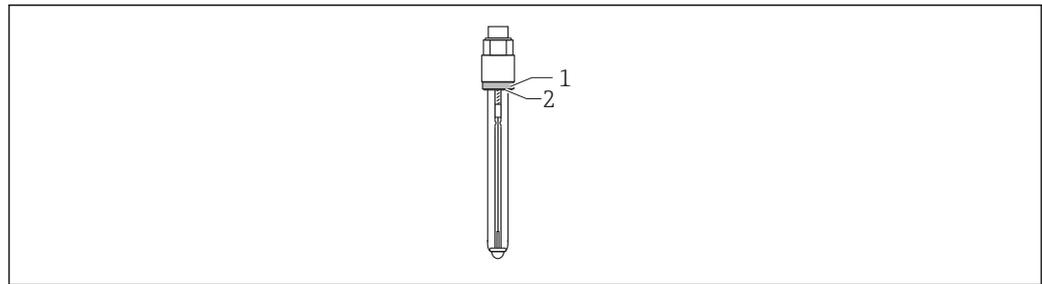
Install the assembly as follows:

1. Apply a thin layer of grease (e.g. Klüber Paraliq GTE 703) to the two O-rings on the Tri-Clamp connections.
2. Position both O-rings in the grooves on the Tri-Clamp connections.
3. Secure both brackets and ensure that the O-rings do not slip.

4.4 Installing the sensor

You can only install sensors that meet the following requirements:

- Threaded plug-in head Pg 13.5
- 120 mm shaft length
- 12 mm shaft diameter



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 3 *Sensor*

1 *Thrust collar*

2 *O-ring*

1. Remove the protection cap from the sensor.
2. Check that the O-Ring (item 2) and the thrust collar (item 1) are provided on the sensor shaft.
3. Wet the sensor shaft with water.
 - ↳ This makes it easier to screw in the sensor.
4. Screw in the sensor until it is hand-tight (3 Nm (2.2 lbf ft)).

4.5 Post-installation check

- ▶ After mounting, check all the connections to ensure they are secure and leak-tight.

5 Maintenance

WARNING

Risk of injury if medium escapes

- ▶ Before each maintenance task, ensure that the process pipe is empty and rinsed.

5.1 Cleaning the assembly

To ensure stable and reliable measurements, the assembly and the sensor must be cleaned regularly. The frequency and intensity of the cleaning process depend on the medium.

1. To do so, you must remove the sensor.
2. Clean the assembly depending on the degree of fouling.
 - ↳ Remove light dirt and fouling using suitable cleaning solutions (→  12). High levels of contamination are removed using a soft brush and a suitable cleaning agent.
For very persistent dirt, soak the parts in a cleaning solution. Then clean the parts with a brush.

 A typical example of a cleaning interval would be 6 months in the case of drinking water.

5.2 Cleaning the sensor

You must clean the sensor:

- before every calibration
- Regularly during operation
- Before returning it for repairs

Remove the sensor and clean the sensor manually.

NOTICE

Incorrect measurement or damage to sensor due to incorrect cleaning

- ▶ Clean the ORP electrodes mechanically only and always use water. Never clean with chemical cleaning agents. Such cleaning agents cause a potential to build up at the electrode which takes a few hours to dissipate. The potential causes errors in the measurement.
- ▶ Do not use abrasive cleaners. These cleaning agents may cause irreparable damage to the sensor.
- ▶ After the sensor has been cleaned, rinse the assembly's rinse chamber using an ample quantity of water (possibly distilled or deionized). Otherwise, residue from the cleaning agent may distort the measurement.
- ▶ Where necessary, perform a new calibration following the cleaning process.

5.3 Cleaning agent

The choice of cleaning agent depends on the degree and type of contamination. The most common types of contamination and the appropriate cleaning agents can be found in the following table.

Type of soiling	Cleaning agent
Greases and oils	Hot water or tempered, surfactant-containing (alkaline) media ¹⁾ or water-soluble, organic solvents (e.g. ethanol)
Limescale deposits, metal hydroxide buildup, lyophobic biological buildup	Approx. 3% hydrochloric acid
Sulfide deposits	Mixture of 3% hydrochloric acid and thiocarbamide (commercially available)
Protein buildup	Mixture of 3% hydrochloric acid and pepsin (commercially available)
Fibers, suspended substances	Pressurized water, possibly surface-active agents
Light biological buildup	Pressurized water

1) Do not use with the Tophit ISFET sensor! Instead, use commercially available acid cleaners for the food industry (e.g. P3-horolith CIP, P3-horolith FL, P3-oxonia active).

NOTICE

Health hazard due to solvents

- ▶ Do not use any halogen-containing, organic solvents or acetone. These solvents may destroy plastic components of the sensor and are also suspected carcinogens (e.g. chloroform).

5.4 Replacing the O-rings

Replace the O-rings at least every 12 months.

Maintenance intervals depend on the application. Certain conditions (heat, pressure, aggressive chemicals, abrasion) require that maintenance intervals be reduced.

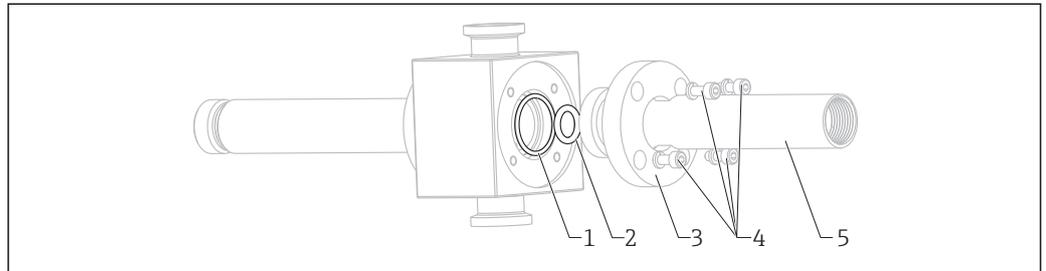
CAUTION

Risk of injury due to residual medium and elevated temperatures

- ▶ When handling parts that are in contact with the medium, protect yourself from residual medium and elevated temperatures. Wear protective goggles and safety gloves.

Preparation:

1. Interrupt the process. Pay attention to residual medium, residual pressure as well as elevated temperatures.
2. Completely detach the assembly from the process connection.
3. Remove the sensor.
4. Clean the assembly (see "Cleaning the assembly" section).



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4 Replacing the O-rings

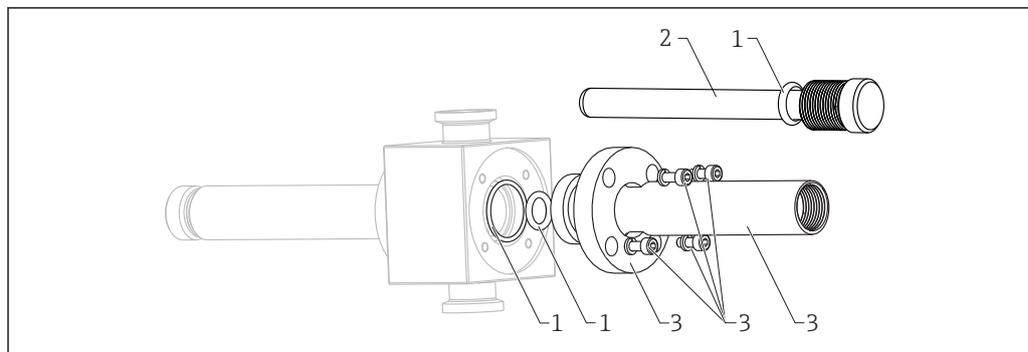
- 1 O-ring
- 2 O-ring
- 3 Lap joint flange
- 4 Fixing screws
- 5 Sensor guide

Replace the O-rings as follows:

1. Release the four fixing screws (item 4).
2. Remove the sensor guide (item 5) and lap joint flange (item 3).
3. Remove the O-ring (item 1) from the assembly.
4. Remove the O-ring (item 2) from the sensor guide.
5. Apply a thin layer of grease (e.g. Klüber Paraliq GTE 703) to the new O-rings.
6. Position the new O-rings in the appropriate grooves.
7. Assemble the assembly.

6 Repairs

6.1 Spare parts kit



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5 Spare parts

Item	Description of spare parts kit	Order no.
1	Kit CYA680 KALREZ O-rings	71321494
1	Kit CYA680 VITON O-rings	71321495
1	Kit CYA680 EPDM O-rings	71321496
2	Kit CYA680 dummy sensor 120 mm, 316L	71321497
2	Kit CYA680 dummy sensor 120 mm, PVDF	71321498
3	Kit CYA680 pH sensor adapter 120 mm, 316L	71321499
3	Kit CYA680 pH sensor adapter 120 mm, PVDF	71323973
	Kit CYA680 Lf sensor adapter 120mm	71361303

For more detailed information on spare parts kits, please refer to the "Spare Part Finding Tool" on the Internet:

www.endress.com/spareparts_consumables

6.2 Return

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered. As an ISO-certified company and also due to legal regulations, Endress+Hauser is obliged to follow certain procedures when handling any returned products that have been in contact with medium.

To ensure swift, safe and professional device returns, please read the return procedures and conditions at www.endress.com/support/return-material.

7 Accessories

 The following are the most important accessories available at the time this documentation was issued. For accessories not listed here, please contact your service or sales office.

7.1 pH sensors

Orbisint CPS11D / CPS11

- pH electrode for process technology
- Optional SIL version for connecting to SIL transmitter
- With dirt-repellent PTFE diaphragm
- Product Configurator on the product page: www.endress.com/cps11d or www.endress.com/cps11

 Technical Information TI00028C

Memosens CPS31D

- pH electrode with gel-filled reference system with ceramic diaphragm
- Product Configurator on the product page: www.endress.com/cps31d

 Technical Information TI00030C

Ceraliquid CPS41D / CPS41

- pH electrode with ceramic junction and KCl liquid electrolyte
- Product Configurator on the product page: www.endress.com/cps41d or www.endress.com/cps41

 Technical Information TI00079C

Ceragel CPS71D / CPS71

- pH electrode with reference system including ion trap
- Product Configurator on the product page: www.endress.com/cps71d or www.endress.com/cps71

 Technical Information TI00245C

Orbipore CPS91D / CPS91

- pH electrode with open aperture for media with high dirt load
- Product Configurator on the product page: www.endress.com/cps91d or www.endress.com/cps91

 Technical Information TI00375C

Memosens CPS171D

- pH electrode for bio-fermenters with digital Memosens technology
- Product Configurator on the product page: www.endress.com/cps171d

 Technical Information TI01254C

7.2 ORP sensors

Orbisint CPS12D / CPS12

- ORP sensor for process technology
- Product Configurator on the product page: www.endress.com/cps12d or www.endress.com/cps12

 Technical Information TI00367C

Ceraliquid CPS42D / CPS42

- ORP electrode with ceramic junction and KCl liquid electrolyte
- Product Configurator on the product page: www.endress.com/cps42d or www.endress.com/cps42

 Technical Information TI00373C

Ceragel CPS72D / CPS72

- ORP electrode with reference system including ion trap
- Product Configurator on the product page: www.endress.com/cps72d or www.endress.com/cps72

 Technical Information TI00374C

7.3 pH ISFET sensors

Tophit CPS441D / CPS441

- Sterilizable ISFET sensor for low-conductivity media
- Liquid KCl electrolyte
- Product Configurator on the product page: www.endress.com/cps441d or www.endress.com/cps441

 Technical Information TI00352C

Tophit CPS471D / CPS471

- Sterilizable and autoclavable ISFET sensor for food and pharmaceuticals, process engineering
- Water treatment and biotechnology
- Product Configurator on the product page: www.endress.com/cps471d or www.endress.com/cps471

 Technical Information TI00283C

Tophit CPS491D / CPS491

- ISFET sensor with open aperture for media with high dirt load
- Product Configurator on the product page: www.endress.com/cps491d or www.endress.com/cps491

 Technical Information TI00377C

7.4 pH and ORP combined sensors

Memosens CPS16D

- Combined pH/ORP sensor for process technology
- With dirt-repellent PTFE diaphragm
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps16D

 Technical Information TI00503C

Memosens CPS76D

- Combined pH/ORP sensor for process technology
- Hygienic and sterile applications
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps76d

 Technical Information TI00506C

Memosens CPS96D

- Combined pH/ORP sensor for chemical processes
- With poison-resistant reference with ion trap
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cps96d



Technical Information TI00507C

7.5 Conductivity sensors

Memosens CLS82D

- Four-electrode sensor
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cls82d



Technical Information TI01188C

8 Technical data

8.1 Process

Process temperature range and pressure range Process temperature and pressure range depend on the material and nominal diameter.

Process connection	Nominal diameter	Nominal pressure	Temperature
316L Tri-Clamp	0.25 to 2"	16 bar (230 psi)	0 to 130 °C (32 to 266 °F)
PVDF Tri-Clamp (Kynar)	0.25", 0.5", 0.75"	4 bar (58 psi)	0 to 130 °C (32 to 266 °F)

 Please observe the maximum permitted process temperature and process pressure of the sensor.

8.2 Mechanical construction

Dimensions → Section "Installation"

Weight Weight of the stainless steel version (examples):

Flange	1 Sensor location	2 Sensor locations
¼" Tri-Clamp	Approx. 1.30 kg (2.86 lbs)	Approx. 1.65 kg (3.64 lbs)
2" Tri-Clamp	Approx. 2.20 kg (4.85 lbs)	Approx. 2.55 kg (5.63 lbs)

Materials Flow assembly: Stainless steel 1.4404/1.4435 (AISI 316L), PVDF
 O-rings: EPDM FDA, KALREZ FDA, VITON FDA
 PVDF is not suitable for all hazardous areas.

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